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Socioeconomic Integration in Mozambican Rural Areas through Community-Based Solar Microgrids: A Review and Case Study

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Abstract

Community-based solar microgrids have emerged as a promising solution to improve energy access in rural areas of Mozambique. The analysis is based on qualitative data from case studies and surveys conducted with local communities and project stakeholders. A significant proportion (45%) of households reported increased income opportunities due to improved lighting and power for small-scale businesses. Community-based solar microgrids have facilitated socioeconomic integration by enhancing energy access and creating new economic activities in rural Mozambique. Further investment should be directed towards expanding grid coverage, improving technology reliability, and facilitating community engagement mechanisms. solar microgrids, energy access, socioeconomic integration, Mozambique, rural development The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Community-Based Development, Solar Microgrids, Rural Energy Access, Geographic Information Systems, Participatory Planning, Renewable Energy Integration, Sustainable Development Goals*

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